

**REMARKS**

The Office Action of November 19, 2003 has been received and carefully reviewed. In response, Applicants have amended claims 2, 6-12, 19, and 20 without narrowing the scope thereof, wherein claims 1-24 and 27 remain pending in the application. Applicants note with appreciation the indication that claims 19-24 are allowed and that the drawings filed on November 7, 2001 have been accepted. Applicants submit that pending claims 1-24 and 27 are allowable, wherein reconsideration and allowance thereof respectfully requested in light of the above amendments and the following remarks.

**I. OBJECTED CLAIMS 2-18.**

Claims 2-18 were objected to as being dependent upon a rejected claim, but that these would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**a. Claims 4 and 5.**

Claims 4 and 5 have not been amended, and are believed to be allowable together with independent claim 1 from which they depend, as discussed below.

**b. Claims 10 and 13-18.**

By the above amendment, claim 10 has been rewritten in independent form, including all of the limitations of independent claim 1, wherein the scope of claim 10 has not been narrowed. By this amendment, independent claim 10, and claims 13-18 depending therefrom are now believed to be in condition for allowance, and notice thereof is respectfully requested.

**c. Claims 2, 3, 6-9, 11, and 12.**

Independent claim 19 was indicated as allowed in the Office Action. By the above amendment, claims 19 and 20 have been amended to correct typographical

errors, without narrowing the scope thereof. Objected claims 2, 6-9, 11, and 12 have been amended above such that objected claims 2, 3, 6-9, 11, and 12 depend from allowed claim 19, whereby these claims are also believed to be in condition for allowance, and notice thereof is respectfully requested.

## **II. REJECTION OF CLAIMS 1 AND 27 UNDER 35 U.S.C. § 103.**

Claims 1 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,103,455 to Huang et al. in view of U.S. Pat. No. 6,057,224 to Bothra et al. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons.

### **a. Claim 1.**

Independent claim 1 recites coating a substrate with a sacrificial material that fills gaps, and plasma etching to strip the sacrificial material and a hard mask substantially completely in a single plasma etch process. The Office Action at paragraph 1 refers to Figs. 1-9 of Huang et al., and asserts that item 14 in Fig. 2 of Huang et al. is an insulating material, and that item 50 in Fig. 3 of Huang et al. is a sacrificial material. However, Huang et al. clearly state that item 14 is a doped region of a semiconductor structure (col. 2, lines 42-44), and further indicate that the layer 50 is a metal layer (tungsten) used to fill a contact hole 40 in forming a plug 52 (col. 2, line col. 3, line 8; col. 5, lines 55-57). Applicants submit that ***item 50/52 of Huang et al. is not a sacrificial material*** as proposed in the Office Action.

The Office Action also proposes combining Huang et al. with Bothra et al., presumably to strip the material 50 of Huang et al. substantially completely. However, there is no suggestion or motivation for making the proposed combination. Huang et al. clearly teach the formation of a plug 52 using the deposited metal layer material 50. Consequently, a ***person of ordinary skill in the art would not consider removing the material 50, since this would defeat a primary purpose or goal of Huang et al., specifically the goal of forming a contact plug.*** Moreover, Huang et al. appear directed

to forming a recess free deep contact (Huang et al. title "METHOD TO FORM A RECESS FREE DEEP CONTACT"), wherein a key feature is that the hard mask 30 is not removed before the deposition of the metal 50 to avoid residual photoresist in the contact hole and to avoid contamination of the hole 40 with slurry and crumbs during CMP hard mask removal processing (col. 6, line 1-20). ***Huang et al. therefore appear to teach away from the proposed combination with Bothra et al.***, whereby claim 1 and claims 4 and 5 depending therefrom are patentably distinct from these references.

Bothra et al., fail to teach or suggest the invention of claim 1. The Office Action at page 3 cites to col. 4, line 63 through col. 5, line 16 and Figs. 2-5 of Bothra et al. However, this portion appears to be part of the brief description of the drawings section of Bothra et al., and does not appear to teach or suggest coating a substrate with a sacrificial material that fills gaps, and plasma etching to strip the sacrificial material and a hard mask substantially completely in a single plasma etch process. Applicants accordingly request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a).

**b. Claim 27.**

Claim 27 recites coating a substrate with a sacrificial material that fills gaps, and plasma etching to strip the sacrificial material and a hard mask in a single plasma etch process. As discussed above, there is no suggestion or motivation for, and Huang et al. appear to teach away from, the proposed combination of Huang et al. with Bothra et al. Consequently, Applicants submit that claim 27 is patentably distinct from the proposed combination of Huang et al. and Bothra et al., whereby reconsideration and withdrawal of the rejection thereof is requested under 35 U.S.C. § 103(a).

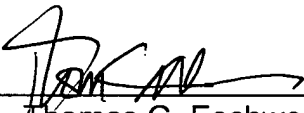
**III. CONCLUSION**

For at least the above reasons, the pending claims are believed to be in condition for allowance and reconsideration thereof is requested.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 50-1733, FASP714US.

Respectfully submitted,  
ESCHWEILER & ASSOCIATES, LLC

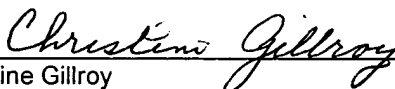
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CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: December 4, 2003

  
Christine Gillroy